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Applied Energy 83 (2006) 211–227

**APPLIED  
ENERGY**

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## Strategic maintenance-management in Nigerian industries

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Accepted 6 February 2005

Available online 13 June 2005

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### Abstract

A developing society needs to adapt to change and foster creativity. In the pursuit of continual improvement (e.g., reducing fossil-fuel consumption and waste, better service performance, greater availability and improved reliability), implementing wise maintenance-schedules is essential for contemporary organisations. Several studies of a wide range of Nigerian industries indicate that indigenous low availability and low productivity are endemic. The resulting closure of some of these industries has triggered off a realisation of the strategic challenges in maintenance management. In addition, the increasingly-competitive business environment in Nigeria has raised the strategic importance of maintenance functions, especially in organisations with significant investments in physical assets. Five strategic aspects of maintenance management have been identified, namely: maintenance methodology; support processes; organisation and work structuring; comparable culture; and general manage-

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*Abbreviations:* ASP, application service provider; BSC, balanced score card; CBM, condition-based maintenance; CEO, chief executive officer; CMMS, computerised maintenance-management system; ES, enterprise system; FMECA, failure modes, effect and critical analysis; JIT, just-in-time; OEE, overall equipment-effectiveness; RCM, reliability-centred maintenance; SMPM, strategic maintenance performance management; SMT, self-management team; STS, socio-technical systems; TPM, total productive maintenance; TPQM, total planned quality maintenance; and TQM, total quality management.

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doi:10.1016/j.apenergy.2005.02.004

ment policy. Three factors that permeate these dimensions are wise leadership, excellent communications and an understanding of the human factors involved.

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*Keywords:* Strategy; Maintenance; Nigerian electric-power stations

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## The challenge

The subject of change influences much of what is currently being written about management. All organisations are being exhorted to adapt to changes and hence introduce modern technology, leadership skills and more effective means of communication. It has become evident that any organisation that wishes to achieve rapid, substantial and sustainable improvements in maintenance effectiveness, in other words in physical-asset performance, must act strategically.

Maintenance actions are dependent on such factors as the plant's downtime history, and its expected life. Maintenance should preserve the functions of the assets. With rising expectations, increasingly onerous regulatory constraints, shifting technological paradigms and frequent reorganisations, major corporations have developed formal mission-statements to help them maintain a successful course through these many demands. Thus, it is worth developing a corresponding commitment to facilitate the maintenance team doing likewise. The mission statement must recognise the needs of all the stakeholders of the maintenance service. Maintenance serves three distinct groups – the *owners* of the asset, the *users* (usually the operators), and *society* as a whole. Maintenance depends on a range of people – from designers of the equipment to its operators. Thus it is desirable to acknowledge the need for everyone involved with the asset to share a correct common understanding of what needs to be done, and to be able and willing to do whatever is needed right first time, every time.

If systems do not fail, maintenance would be superfluous! The technology of maintenance includes finding and applying suitable ways of managing techniques that include predictive and preventive maintenance, failure-finding and run-to-failure [1]. Each category includes a host of options: maintainers need to learn what these options are, but they also need to decide which are worth implementing in their own organisations. If they make the right choices, it is possible to improve asset performance, and simultaneously even reduce the cost of maintenance. If they make wrong choices, new problems may arise while existing problems get worse, so the mission statement should stress the need to make the most cost-effective choices from the full array of options. The severity and frequency with which a failure incurs adverse consequences dictate whether a particular failure-management technique is worth applying. So, the mission statement should acknowledge the key role of consequence avoidance in maintenance. The development and execution of a maintenance strategy for an industrial plant consists of three steps [1]:

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